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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/630,900

07/31/2003

Masanobu Nogome

2003_1075A

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10/07/2004

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EXAMINER

TRAN, MAI HUONG C

ART UNIT

PAPER NUMBER

2818

DATE MAILED: 10/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/630,900	Applicant(s) NOGOME ET AL.	
	Examiner Mai-Huong Tran	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/30/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restriction

Application's election without traverse of Group I (Claims 1-6) drawn to a semiconductor device is acknowledged for prosecution in the subject application. Accordingly, claims 7-16 are canceled.

Drawings

The drawings are objected to for the following reasons.

Figures 1A, 1B, and 1C are not designated by a legend such as "Prior Art". The Legend is necessary in order to clarify what applicant's invention is (see MPEP § 608.02g). Correction is required.

Claim Rejections - 35 U.S.C. § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U. S. C. § 102 (b) as being anticipated by Applicant's admitted Prior Art (AAPA) (pages 1 and 2 of present specification and figures 1A-1C).

Regarding to claim 1, AAPA discloses a semiconductor device that includes a semiconductor substrate 100 having a via hole 140 that penetrates the semiconductor substrate 100 from a surface to a reverse side (fig 1B), wherein a part of an electrode (page 1, lines 31-32) formed on the surface of the semiconductor substrate 100 reaches the reverse side 150 of the semiconductor substrate 100 through the via hole 140, and an inside of the via hole 140 is filled in with a photosensitive resin (page 2, line 22, fig. 1C) to fully cover an aperture of the via hole 140 on the surface of the semiconductor substrate 100.

Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-6 are rejected under 35 U.S.C. 103 (a) as being unpatentable over AAPA in view of U.S. Patent No. 5,528,074 to Goto et al. (hereinafter Goto) and further in view of Hayashi et al. (U.S. 4,902,726) (hereinafter Hayashi).

Regarding to claim 2, AAPA discloses the claimed invention except for the semiconductor device wherein the photosensitive resin is filled in more shallowly than depth of the via hole.

However, Goto discloses the semiconductor device wherein the photosensitive resin 3b is filled in more shallowly than depth of the via hole (figs. 4(a)-4(e)).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the semiconductor device wherein the photosensitive resin is filled in more shallowly than depth of the via hole, as taught by Goto in order to provide a semiconductor device operating at a microwave frequency that enables a reliable evaluation of input-output characteristics of the device and to provide a semiconductor device or a hybrid integrated circuit device that performs input and output of microwave signals with an external device without dissipation due to unwanted radiation and reflection (col. 4, lines 25-37).

Regarding to claims 3 and 5, AAPA in view of Goto discloses the claimed invention except for the semiconductor device wherein a main ingredient of the photosensitive resin is silicone resin or epoxy resin. However, Hayashi discloses a main ingredient of the photosensitive resin is epoxy resin (col. 1, lines 21-22, col. 5, lines 50-52).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the main ingredient of the photosensitive resin to be epoxy

resin, as taught by Hayashi in order to provide a resin composition solution for obtaining a printed wiring board having high reliability with sufficient permanent mask film thickness at the upper portion of the circuit and around the through-hole on the substrate (col. 2, lines 40-44).

Regarding to claims 4 and 6, AAPA in view of Goto discloses the claimed invention except for the semiconductor device wherein viscosity of the photosensitive resin at 25°C is 70-600 mPas. However, Hayashi discloses the viscosity of the resin composition solution is 500 to 1200 mPas, 200 to 700 mPas (col. 2, lines 10-15), and the composition solution has a viscosity at 25°C of 100 mPas or more and 200 mPas or less (col. 2, lines 58-60). Although the Hayashi ranges are slightly different from the claimed range, this does not define patentable over AAPA in view of Goto and further in view of Hayashi since the discovery of the optimum or workable range involves only routine skill in the art. In re Aller, 105 USPQ 233.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mai-Huong Tran whose telephone number is (571)272-1796. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

uK
10/4/04


Mai-Huong Tran
Examiner
Art Unit 2818